Thoughts on the

DES Monsoon Calibration Constants

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Assume for now that we have 6 PAN/ DHE units, so our Monsoon system consists of 3 double crates each with two DHEs (one of each kind) Overall we have:

3 DHE systems each reading out 18 CCDs. Each has
1 MCB (one Master Control Board)
2 CBB   (two Clock and Bias Boards)
3 CCDACQ (12 channels each). (three CCD Acquisition Boards)

3 DHE systems each reading out 9 CCDs. Each has
1 MCB,
1 CBB
2 CCDACQ (12 channels each). Only 18 channels used.

We also have one Monsoon Supervisor.

Total # of boards with calibration constants is:

CBB   9   +   spares
CCDACQ   15   +   spares.
(MCB   6   +   spares)

The total # of CBB and CCDACQ boards is less than 40.
Each board has an internal ID, boardIdentityClk for CBB
and boardIdentityCcd for the CCDACQ.
Pan reads in boardIdentity from the board using the standard
ppx command.

Currently, a configuration file, in CSV format, handles calibration constants for each DHE.   A configuration file has entries in standardized format for each CBB and CCDACQ card.

Define as *"one-card configuration file"* a set of lines describing a particular board in the file. These lines contain the following information

• A standard number of PAN functions and attributes, corresponding DHE register names on the CBB or CCDACQ board, DHE crate, slot and register address, usage, relevant methods and other entries that are the same for all cards of the same type.

• Card-dependent parts are calibration constants such as DACs slopes and intercepts, slot = the location of the card in the DHE crate. It is part of the "Base Address" entry for each attribute for a given board type.

Each line in the CSV configuration file contains 16 entries whose headings are:
PAN Attribute Name,DHE Func Name,Base Address,Number of elements,Creg,Set Method,Read Method,PANType,DHEType,Coef1, Coef2,Function ID,Min Value,Max Value,UnitName,HelpText

Example:
One line for the CCB the entry for one of the clock
rails, H1_L used in our system, for the horizontal charge shift on the CCD on the L-side, is

H1_L_gateLowDac,CLK_LOW_00,0x0040124,1,0x07000000, SIMPLE,SIMPLE,FLOAT,UINT,12.944,131.5499,LINEAR,-9.85, 9.75,Volt,Clock rail low voltage DAC register for channel 0

Standard one-card configuration files, ccb_csv_ID and ccd_csv_ID, with all entries specified except for the SLOT, could be stored in each PAN or on a shared disk. Each card configuration file must have an identifier = the board ID (boardIdentity).

A pass1 working example of a program which makes configuration CSV files for CBB and CCDACQ boards is available on Snowstorm in /usr/Monsoon/cfg/csvfiles. We have 3 input files and the program itself.
- CBB calibration constants (from MNSN-EL-10-0300SN014)
- CCDACQ calibration constants (from mnsn-el-04-0002sn022)
- CSV configuration file (from WS 01/20/06)
- getcsv_BBCCD.cpp

This program could be used to make all necessary one-board configuration CSV files, ccb_csv_ID and ccd_csv_ID.

This method requires custom-made calibration files. We made these files using the NOAO calibration files received from Terri and Walter. We will put in the Document Data Base a description how these files are organized. It would be easier if calibration could directly output calibration constants in the format that we can use.
 (But the amount of work to make 40 such files is not huge.)

The one-board configuration csv file can be extracted from the full configuration CSV file, with the string SLOT replacing the slot -entry 0x004 in the "Base Address".

To generate a custom-made CSV configuration file for a given DHE, with given boards in given slots, one could then run a script similar to one written by Michael Haney for a set of generic ccb_csv_template etc (one-board configuration csv file) files. One defines the focal plane, and specifies slots for each one-board configuration csv file.

Handling the CSV file is the big part of the problem,
but there are several more subtle pieces that will
need to be addressed.

Only CBB and CCDACQ are addressed here.

Not included: the sequencer file, the various .mod
files. These are configuration elements as well,
as are the time constants embedded in the sequencer